Medication Compliance: Adherence Among Asthma And Tuberculosis Outpatients at RSKP X Yogyakarta

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Abstract:
Introduction: Asthma and Lung *tuberculosis* is a one of chronic diseases which requires a long-term, strictly managed medical treatment. Patients in final stages show a lower compliance level. However, asthma and *Pulmonary Tuberculosis* compliance level on medical treatment, as in this case, in pulmonary hospital Rumah Sakit Khusus Paru X Yogyakarta (later called RSKP X) has yet been found. The main goal of this research is to describe the medical compliance and adherence, specifically on taking medicines, and behavior that comply with it, based on MMAS *(Morisky Medication Adherence Scale)*, with asthma and *Pulmonary Tuberculosis* patients in RSKP X Yogyakarta as primary subjects.
Methods: This research was conducted prospectively with a cross sectional method to the outpatients RSKP X in a period of December 2014 to January 2015. There were 123 subjects who are classified for inclusiveness including 103 patients with asthma and lung tuberculosis. The rest of patients in this group were later dismissed due to chronic diseases and in states of deafness (disabled). Data gathering was conducted by direct interview and questionnaires based on MMAS plot. Patients' compliance scores are then arranged in a descriptive view.
Analysis and Outcomes: Of the 123 subjects, 70 patients (56,9%) comply the medicine treatment, and another 53 patient (43,1%) did not comply. The connections between patients' character and behavior with their medication compliance has a significantly varied score ($p<0.05$) on variables of sex, education level and employment status.
Conclusion: Compliance of patients with asthma and pulmonary tuberculosis is still 43.1%, which is in "low" category. Gender, education, and work may affect medication adherence.

Keywords: Asthma, *Pulmonary Tuberculosis*, Compliance, MMAS

Introduction

In the last thirty years there was an increase in ashma prevalence, especially in developed countries. The increase of asthma prevalence in Asian countries like Singapore, Taiwan, Japan, or South Korea is also prominent. Asthma cases increased in number dramatically in last fifteen years, both in developing and developed countries (GINA, 2011).

Asthma is one of the few diseases could not be completely cured. Current healing cannot guarantee nor predict when the next symptoms will occur. Asthma is a chronic inflammatory disorder in airway that involves a variety of cell types and may be an obstruction which is reversible, either in spontaneous or in treatment phase. Treatments on patients with asthma cannot always restore the condition of full health.

Many studies have shown that patient's adherence to chronic disease treatment is generally low. Research involving outpatients shows that more than 70% of patients did not take their medicines as the doses ruled. According to the WHO' report in 2003, the average patient adherence to long-term therapy for chronic diseases in developed countries is only 50%, while in developing countries the number is even lower. The lack of knowledge and understanding among patients as the key factor in this high rate of medication incompliance. In asthma cases, this low rate of compliance may affect directly to public endevor in reducing numbers of occurance.

Patient's compliance in medication schedules and doses can be measured using several instruments. One of them is MMAS-8 (*Morisky Medication adherence Scale*) which consists of three aspects: frequency of missed

medications, deliberately stop taking the medicine without being noticed by the medical team, the ability to self-control in medication schedule (Morisky et al, 2008). Factors that affect patient's compliance in *Asthma* and *Pulmonary* tuberculosis medication schedule may be patient's habit and behavior, knowledge, treatment regiments, and low social support (Sabate, 2003). Therefore, it takes a more comprehensive and intensive approach in order to achieve a therapeutic target for *asthma* patients.

Based on considerations written above, we intend to determine the level of adherence and factors associated with it among patients with *Asthma* and *Pulmonary* tuberculosis in the case of SKP X Yogyakarta. This study is expected to contribute to health psychology in general, and clinical psychology associated with patient's compliance in taking the medicines.

COLLECTING AND ANALYZING DATA

This research is a study with a cross-sectional method through a survey that includes face-to-face interviews and MMAS questionnaires. An MMAS questionnaire consists of 8 questions and the level of compliance is measured from the range of 0 to 8. The response category consisted of "YES" or "NO" to the question items from 1 to 7 arranged in sequence. For questions number 1 to 4 and 6 to 7, if the value is 1 then the answer is "YES", and if the value is 0 then the answer is "NO" , while question 5 is rated 1 then the answer is "YES", and if it is rated 0 then the answer is "NO". Question 8 is scored in a 5-level scale, which represents scores in 1 = never; 0.75 = occasionally; 0.5 = sometimes; 0.25 = normally and 0 = always. The level of treatment adherence is categorized into three levels, namely higher compliance (MMAS values equal to 8), moderate adherence (MMAS values 6 to less than 8), and low adherence (MMAS values of less than 6). This types of questionnaire have been tested, as their validity and reliability described by Alfian *et Al* (2013) in Puskesmas Kasihan Bantul, citing that the MMAS scheme is both valid and reliable for typical researches.

The study was conducted at the Pulmonary Hospital X (RSKP X) Yogyakarta from 1 December 2014 to 31 January 2015 with the *Asthma* and *Pulmonary tuberculosis* patients' inclusion criteria were: (1) adult patients both men and women aged >17, (2) patients with asthma and pulmonary tuberculosis with regular medical check schedule, (3) patients who were diagnosed suffering from *Asthma* and *Pulmonary* tuberculosis, (4) patients willing to be involved in the study by completing the informed consent, (5) Normal state of literacy. While the exclusion criteria in this study were: (1) Suffering from complications of chronic disease, (2) Not willing to be involved until the end of the study, (3) In a state of deafness.

Before conducting this research, we applied for an ethics clearance from the Ethic Committee. This study has been approved by the ethics committee at Universitas Muhammadiyah Yogyakarta. The steps in carrying out this study are as follows: (1) Collecting data about patients who are positively diagnosed with asthma and pulmonary tuberculosis confirmed by doctors in RSKP X Yogyakarta for inclusion criteria, (2) Obtaining all Informed Consents required for patients involved in this study; Patients signed on informed consent sheet, data recording sheet, and patient's demographic data, (3) Interviewing patients as subjects to confirm medical record written in the questionnaires. Patients were later asked to complete the MMAS questionnaires and interviewed directly for questions out of the questionnaire. The respondents are 124 patients, including 104 patients with asthma and 20 patients with pulmonary tuberculosis. Outcomes from MMAS questionnaires and interviews were later analyzed with *SPSS* v.16.0 analyzing software.

To describe adherence level based on age and gender, the study calculated with crosstab analysis test data, while the patient's compliance outcomes are presented in descriptive form.

RESULT OF STUDY

From all 103 samples in this study, subjects dominated by male patients by 62 (50.4%) while female patients by 61 (49.6%). As for age, a number of 69 (56.1%) of subjects are younger than 45 while 54 (43.9%) others are older than 45 years old. For education, 62 (50.4%) of the subjects have a higher education (high

school, associates, undergraduate, graduate while there are also 61 patients (49.6%) whose low education (no school, elementary, middle-higher shchool) or any other degree. In category of level of employment, 86 patients (69.9%) of our subjects are those with low employment state (unemployed, employee, entrepreneurs) and 37 patients (30.1%) patients are high employment type (private, self-employed, civil servants)

For the category of presence or absence of a family medical history based on the patient's diagnosis, or samples are dominated by 73 patients (59.3%) who do not have any previous family medical history and 50 patients (40.7%) with a family medical record or history. Of 103 asthma patients, there are 76 patients (61.8%) were categorized as uncontrolled asthma and only 27 patients (22%) with partially controlled asthma, as shown in Table I below.

The results on patients'level of compliance on medication behavior can be seen in Table II. We can see that in category if patients' adherence on medicine is no more than 53 patients (43.1%) and patient number with non-adherence behavior is higher, as many as 70 patients (56.9%).

From the SPSS test we find that age, gender, education, employment, and family history that have an average difference value of the compliance of each group in each variable for compliance is sex with a significance value <0.05 is 0,007, education amounted to 0,000, and jobs with 0,001. While the other has a significance value > 0.05 so it does not have the difference in average compliance rate of each group in age, and family history. This means that the age group under 45 or older had an average value of the same compliance as well as for family history.

Tabel I. Demographic Characteristics of Patients

Variabel	Category	N	%
Age	< 45 tahun	69	56,1
	>45 tahun	54	43,9
Total		123	100
Sex	Man	62	50,4
	Women	61	49,6
Total		123	100
Education	Low (Tidak sekolah, SD, SMP)	61	49,6
	High (SMA, D1, D3, S1, S2)	62	50,4
Total		123	100
Level of Employment	Low (Tidak bekerja, buruh, pedagang)	86	69,9
	High (PNS, swasta, wiraswasta)	37	30,1
Total		123	100
Family History of Disease	With record/history	50	40,7
	No record/history	73	59,3
Total		123	100
Asthma Control Test	Uncontrolled	27	22
	Partially controled	76	61,8
Total		123	100

Table II. Level of Patients' Compliance

Score	Category	N	%
< 6	Comply	70	56,9
> 6	Not Comply	53	43,1
Total		123	100

From the test we also find that medication adherence among men is higher than women. For education, adherence rate is highest among those with higher education (high school, Associates, undergraduate, graduate) compared to those with low education (no school, elementary, junior school). And for level of employment values medication

adherence was higher among those with low level of employment (unemployed, employee, entrepreneurs) than those with higher occupations (civil servants, private, self-employed).

The variable of habit and behavior of patients with Asthma is not only seen from the value of compliance but also seen from their medical control test scores. After calculating these scores with SPSS we found that age, gender, education, employment, and family history have average difference of FEV1 and asthma control test is a family history of significant value <0.05 or 0.037. From the test it is known that patients with family medical histories are more likely uncontrolled than those patients without a family medical histories. The complete and elaborative result displayed as can be seen in Table III.

Tabel III. Connection between Patients' Habit and Behavior and Asthma Control Compliance Level and Test

Variables	Category	% of Compliance	P	% Asthma Control Test
Age	< 45 years old > 45 years old	60,4 39,6	0,465	51,3 48,7
Sex	Male Female	64,2 35,8	0,007*	51,3 48,7
Education	Low (No school, Elementary, Junior) High (High school, Associates, Undergraduate, Graduate)	22,6 77,4	0,000*	52,6 47,4
Level of Employment	Low ((Unemployed, employee, entrepreneur) High (PNS, swasta, wiraswasta)	54,7 45,3	0,001*	63,2 36,8
Family Medical History	Any record No record	41,5 58,5	0,506	36,8 63,2

Note: P represents level of significance; (*) is the value of the significance of each group (p <0.05)

DISCUSSION

This research was conducted with outpatients at RSKP X Yogyakarta during the period of 1 December 2014 until 31 January 2015 with 123 subjects who met the inclusion criteria play an important role in achieving the target of therapeutic success, especially for chronic diseases such as *Asthma* and *Pulmonary Tuberculosis*. Lack of patient adherence to the treatment of *Asthma* and *Pulmonary* tuberculosis can cause uncontrolled asthma with frequent signs of recurrent attacks that can disrupt daily activities and can also increased *Asthma* status of suffering. The low compliance in patients with pulmonary tuberculosis may cause the longer the treatment that must be endured by the patients.

This patients' noncompliance among outpatients of *Asthma* and *Pulmonary Tuberculosis*is is important to determine the effectiveness of therapeutic treatment with its promising targets. However, clinicians are often unaware by the habits of patients taking the drug, which is probably because they do not have time to do so. In addition, they consider non-compliance as not important. One way to assess the compliance of patients with asthma and pulmonary tuberculosis in taking medication as ruled is to use

Morisky Medication adherence questionnaire Scale (MMAS). Generally, factors associated with adherence in patients with asthma and pulmonary tuberculosis are age, education, patient knowledge about the drug, the patient's knowledge about the disease, the social and economic status, treatment regimens and patient interactions with health professionals.

After conducting an analysis of age, gender, education, occupation, family history of disease, and asthma control test which has a compliance rate differences occur in the variable gender, education, and employment. In the gender variable most respondents who suffer from asthma and pulmonary tuberculosis were males by 62 patients (50.4%). This is in accordance with the statement of the Global Initative for Asthma (GINA) and the WHO, citing that more men than women who suffer from asthma and pulmonary tuberculosis. Research conducted in Gambia also shows the results of that comparison of patients with *Pulmonary Tuberculosis* in among men and women was 2.5 : 1. It can be caused due to heavy workload, inadequate rest time, and unhealthy lifestyles such as smoking and drinking alcohol causing men prone to suffer from pulmonary tuberculosis more than women. Research conducted by Sihombing, M. *et al* (2010), shows that women are more prone to suffer from asthma than men. This is because the in-birth size of the ***Lung*** in men are smaller than women's. To the variable level of education of the research is dominated by the higher education level for 62 patients (50.4%). This is not consistent with studies conducted in The Gambia (2010) which states that 9 of 10 patients with less low levels of education cannot explain about the disease and how treatment of pulmonary tuberculosis.

Identifying groups of patients who have problems with medication adherence can clearly be targeted in an effort to improve compliance, for example, in this study the patients were female. In addition, the low in adherent patients' undergoing treatment (MMAS score> 6) where the value is only 43.1%. The cause of this non-compliance is fairly complex, including the complicated medical regimens, medication costs, age, lack of social support, and cognitive problems.

Uncontrolled asthma increases the cost of treatment, resulted in the loss of school days for children or working time for adults, a visit to the doctor, emergency room, inpatient, nuisance activity, and poor quality of life (Yunus, 2010). The purpose of asthma treatment management and control is important to drag maintain the condition of the disease in controlled circumstances, without the side effects of the therapy (Bateman et al, 2004). Pulmonary tuberculosis patients who do not comply in treatment will lead to resistance to the drugs frequently taken. Types of drugs commonly used in an appropriate treatment guidelines are no longer able to kill germs. (Muchid A, 2006).

Medication adherence become a vital factor that can affect the success of the treatment of *Asthma* and *Pulmonary Tuberculosis*. All efforts to compliance require intervention intended to improve the current situation of observation in this study. Thus, every effort should be made to identify the reason for non-compliance and the steps that should be done to improve compliance such as the active participation of health workers, such as the participation of colleagues pharmacists who practice their profession in any proper health care. Pharmacists can collaborate with physicians in providing patient education about *Asthma* and *Pulmonary Tuberculosis*, monitor patients through community pharmacy, adherence to drug therapy and non-drug, as well as to prevent or solve problems related to drug administration.

CONCLUSION

Medication adherence in patients with *Asthma* and *Pulmonary* tuberculosis among outpatients at RSKP X of Yogyakarta as measured using a questionnaire MMAS result of 123 patients, 70 patients (56.9%) non-compliant in the treatment of asthma and pulmonary tuberculosis, while 53 (43.1%) patients adhere to the treatment. It can be said patients' compliance in taking medication still low. Gender, education, and level of employment among the affecting factors.

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